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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,600	10/12/2001	Wolf-Dietrich Weber	02998.P018	2730

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EXAMINER

CHACE, CHRISTIAN

ART UNIT	PAPER NUMBER
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2189

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,600

Applicant(s)

WEBER, WOLF-DIETRICH

Examiner

Christian P. Chace

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Strongin et al (US Patent #6,510,497).

With respect to independent claim 1, a method for scheduling access to a device is disclosed in the title.

Tracking a current state of the device is disclosed in column 11, lines 45-50. This is also disclosed in column 18, lines 22-35 as “determining a status.”

Tracking a count of a number of requests which require a “particular” state is disclosed in column 11, lines 55-60, as the number of requests issued and/or amount of time elapsed. Both “particular states” would inherently require a count of some sort. A count is one or more, and the particular state is the bus direction, as is further explained in column 18, lines 22-35.

Scheduling requests to a device using the current state of the device, the count of the number of requests that have already been scheduled using the current state, a switch point (number of pending operations) indicating when to switch state, wherein after the count reaches the switch point and there are incoming requests having an

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alternate state to the current state (a different bus direction or a different open bank of DRAM) of the device, switching the state of the device to process incoming requests is disclosed in column 12, lines 20-35. Also see column 18, lines 22-35, which discusses scheduling a number of "tracked" requests based on the bus direction, or "device state." The "switch point" is when the pending requests consistent with the memory bus direction are issued, and the bus direction reverses, or switches, to allow the scheduled requests that were previously inconsistent with the previous bus direction to now issue.

With respect to claims 2 and 7, "configuring" the switch point is disclosed in column 12, lines 22-33, which is the number of pending requests. As this number changes, the switch point is "re-configured."

With respect to claims 3 and 12, the switch point being adjustable by software is disclosed in column 15, lines 5-10.

With respect to claims 4 and 9, the switch point being "dynamically" configurable is discussed supra with respect to claims 2 and 7. "Dynamic" simply means it changes.

With respect to claims 5 and 11, the device being a DRAM is disclosed in column 13, line 8, for example. A scheduler type being selected from the group consisting of a DRAM bus turnaround scheduling (consistent with the direction of a bus), DRAM page scheduling (targeted to one or more open pages in memory), and DRAM physical bank switching (identifying one or more closed pages, such as banks, in column 13, lines 50-67, for example) is disclosed in column 14, lines 20-60.

With respect to independent claim 6, a bus scheduler is disclosed in column 17, line 4 as an arbiter configured to arbitrate between memory requests according to a bus direction.

An input configured to receive at least one incoming request, each request indicating a bus direction is disclosed in column 18, lines 22-35, which discloses pending memory access commands, which are scheduled based on their consistency or lack thereof with the memory bus direction. Inherently, there must be an “input configured to receive” these requests for the system to operate – a computer must be told what to do.

A switch point is disclosed in column 18, lines 22-35 in that the “switch point” is when the first set of pending requests are issued and the bus direction switches to accommodate the second set of pending request that were previously inconsistent with that bus direction.

An indicator of a current bus direction is disclosed in column 18, lines 22-35 and in lines 55-60, which discusses determining the direction of the bus. Inherently, if the bus direction is determined, it is indicated.

A count of requests processed through the current bus direction is disclosed in column 18, lines 22-35 as the “one or more” pending access requests. “One or more” indicates a number, which is a count.

Logic configured to switch the direction of the bus to process incoming requests wherein after the count reaches the switch point and there are incoming requests having the direction opposite to the current direction of the device bus, switching the

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direction of the device bus is disclosed in column 18, lines 22-35, which discloses issuing the requests consistent with a bus direction ahead of, or before, the requests inconsistent with the bus direction. (The logic for implementing this method is disclosed in column 17 and 18 in claims 1-12, for example).

With respect to independent claim 8, a scheduler is disclosed as a memory arbiter in column 17, line 4.

A switch point is disclosed as discussed supra with respect to claims 1 and 6.

A current device state is disclosed as a bus direction and/or a page status in column 18, lines 22-35.

A count is disclosed as "one or more" in column 18, line 30.

Logic configured to determine an updated device state using the switch point and count such that when the count crosses a threshold of the switch point, the device state is changed is disclosed in column 18, lines 22-35, where memory accesses are scheduled based on the bus direction and the page status.

Scheduling the access requests to the device using the updated device state is disclosed in column 18, lines 22-35, which discloses that after the pending requests that are consistent with the device state are issued, the access requests are then issued ("ahead of") that are inconsistent with the previous device state.

With respect to claim 10, the device comprising a bus and the device state comprising a bus direction, said scheduling being dependent upon the bus direction is disclosed in column 11, lines 64-65.

With respect to claim 13, the device comprising a DRAM with multiple pages and the device state comprising the identity of at least one open page, said scheduling being dependent upon the at least one page opened is disclosed in column 11, lines 5-10.

With respect to claim 14, the device comprising a DRAM with multiple physical banks and the device state comprising the last accessed physical bank, said scheduling dependent upon the last accessed physical bank is disclosed in column 15, lines 29-34.

Response to Arguments

Applicant's arguments with respect to the independent claims are similar, and examiner will address them together in the interest of efficiency.

Applicant states at page 12 of the instant remarks that,

"Strongin does not disclose scheduling requests to the device using...a switch point indicating when to switch state."

Applicant goes on to state:

*"Strongin is disclosing the scheduling of memory access requests **based on the system memory status and memory bus direction.**"* (emphasis added).

With all due respect, it appears these two statements are contradictory. The point at which the bus direction is switched is the switch point, claimed by applicant. Applicant continues to argue that Strongin does not anticipate the claimed subject matter, and examiner respectfully, but most strongly, disagrees. Applicant's arguments do not point to any area of the specification that more specifically defines a "switch point" as claimed. Accordingly, examiner is left to interpret it broadly, within reason.

Examiner maintains that the rejections supra are, indeed, based on reasonable interpretations of the claim language, specifically the switch point limitations.

Conclusion

This is a RCE of applicant's earlier Application No. 09/977,600. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian P. Chace whose telephone number is 571.272.4190. The examiner can normally be reached on MAXI FLEX.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 571.272.4201. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Christian P. Chace', followed by a horizontal line.

Christian P. Chace
Examiner
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